

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

10/592,908

REC'D 20 APR 2006

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Applicant's or agent's file reference CRD5080PCT0	<b>FOR FURTHER ACTION</b>	See Form PCT/IPEA/416																								
International application No. PCT/US05/12877	International filing date (day/month/year) 16 April 2005 (16.04.2005)	Priority date (day/month/year) 16 April 2004 (16.04.2004)																								
International Patent Classification (IPC) or national classification and IPC IPC: A61M 29/00(2006.01) USPC: 606/200																										
Applicant CORDIS CORPORATION																										
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>2</u> sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;"><input checked="" type="checkbox"/></td> <td style="width: 20%;">Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>			<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand 14 November 2005 (14.11.2005)	Date of completion of this report 12 March 2006 (12.03.2006)																									
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Sarah K. Webb <i>Sharon N. Greene for</i> Telephone No. (703) 308-0858																									

Form PCT/IPEA/409 (cover sheet)(April 2005)

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US05/12877

## Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

- ☐ the international application as originally filed/furnished
- ☒ the description:  
pages 1-13 as originally filed/furnished  
pages\* NONE received by this Authority on \_\_\_\_\_  
pages\* NONE received by this Authority on \_\_\_\_\_
- ☒ the claims:  
pages NONE as originally filed/furnished  
pages\* 14 and 15 as amended (together with any statement) under Article 19  
pages\* NONE received by this Authority on \_\_\_\_\_  
pages\* NONE received by this Authority on \_\_\_\_\_
- ☒ the drawings:  
pages 1-3 as originally filed/furnished  
pages\* NONE received by this Authority on \_\_\_\_\_  
pages\* NONE received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/US05/12877**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims <u>3,6</u>	YES
	Claims <u>1,2,4,5,7,8</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-8</u>	NO
Industrial Applicability (IA)	Claims <u>1-8</u>	YES
	Claims <u>NONE</u>	NO

**2. Citations and Explanations (Rule 70.7)**

Claims 1,2,4, 5,7 and 8 lack novelty under PCT Article 33(2) as being anticipated by US Patent No. 6,364,895 to Greenhalgh. As clearly shown in Figures 1-3, Greenhalgh discloses a filter with a plurality of struts that define first and second filter sections. Figures 2A and 2B illustrate the filter resiliently expanding upon delivery. The second filter section has a greater number of cells than the first section to more efficiently capture debris. The struts can be made of Nitinol (column 4, lines 34-36). Greenhalgh includes projections (52) that engage the lumen to prevent movement of the filter (column 5, lines 60-67). The filter is "retrievable."

Claims 1-4 and 6-8 lack an inventive step under PCT Article 33(3) as being obvious over US Patent No. 6,241,746 to Bosma et al. in view of Greenhalgh. Bosma discloses a filter made of a single unitary piece of metal. The filter has a plurality of struts that define first, second, and central filter sections. The struts extend parallel to the longitudinal axis in the central section. The metal can be nitinol (column 3, line 50). The filter is "retrievable." Bosma fails to form the filter to have more cells in the second filter section. Greenhalgh teaches that having a greater number of struts and cells in the second, downstream section helps to capture debris that flows into the basket through the larger openings of the first section that has fewer struts and cells (column 1, lines 48-67). It would be obvious to one of ordinary skill in the art to modify Bosma in view of Greenhalgh, so that the filter has a greater number of struts and cells in the second section to aid in the capture of debris.

Claims 1-8 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

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CLAIMS

What is claimed is:

1. A retrievable medical filter for therapeutic treatment of a patient, comprising:  
a first and second end defining a longitudinal axis;  
a plurality of struts extending between the first and second ends, the struts tending to resiliently expand in radially outward directions from a compressed initial shape to an expanded deployed shape;  
wherein in the expanded deployed shape, the struts define a first and second filter section and a center section connecting the filter sections;  
wherein each of the first and second filter sections define a number of filter cells, and the second filter section defines a greater number of filter cells than the first filter section;  
such that the second filter section exhibits a greater filtering efficiency than the first filter section.
2. The filter of Claim 1, adapted for use in a body passage or vessel defining a fluid flow direction, such that the first filter section is positioned upstream of the second filter section.
3. The filter of Claim 1, wherein the filter is formed out of one single unitary metal element.
4. The filter of Claim 1, adapted for use in the vena cava.
5. The filter of Claim 1, further comprising anchors formed on at least one surface of the vascular filter, adapted to increase position retention of the filter.

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6. The filter of Claim 1, wherein in the expanded shape, a central portion of each strut tends to extend parallel to the longitudinal axis.
7. The filter of Claim 1, wherein the filter is made of nitinol.
8. A retrievable medical filter for therapeutic treatment of a patient, comprising:
  - a first and second end defining a longitudinal axis;
  - a plurality of struts extending between the first and second ends, the struts tending to resiliently expand in radially outward directions from a compressed initial shape to an expanded deployed shape;
  - wherein in the expanded deployed shape, the struts define a first and second filter section and a center section connecting the filter sections;
  - wherein the second filter section has a greater number of struts than the first filter section;
  - such that the second filter section exhibits a greater filtering efficiency than the first filter section.